

IN THE CLAIMS

1. (Currently Amended) Photo-sensitive element for electro-optical sensors, comprising at least:

a photo-sensitive reception means ~~(11)~~,

a current conversion circuit to convert the current generated by said photo-sensitive reception means ~~(11)~~ into a tension signal, and

an amplification and reading circuit, ~~characterized in that~~

wherein said current conversion circuit comprises at least a P-channel first transistor ~~(21)~~ able to be used as an ideal key and to be piloted with a tension which is variable between a high feed tension and a low feed tension, said photo-sensitive element being able to be taken to a reset state if the pilot tension of said transistor ~~(21)~~ is low, and to an integration state if said pilot tension is high.

2. (Currently Amended) Photo-sensitive element as in claim 1, ~~characterized in that~~ wherein said current conversion circuit comprises at least ~~two transistors (21, 22)~~, a said first P-channel transistor ~~(21)~~ and at least a second N-channel transistor ~~(22)~~, said first and second transistors ~~(21, 22)~~ having the respective source or drain terminals in common and the gate terminals able to be piloted externally by means of a tension of a variable value in order to selectively allow a linear conversion or a logarithmic conversion of said current photo-generated by said reception means ~~(11)~~.

3. (Currently Amended) Photo-sensitive element as in claim ~~1 or 2~~, ~~characterized in that~~ wherein said first and second transistors ~~(21, 22)~~ are of the CMOS type and are able to represent respectively an ideal key ~~(21)~~ and an active load ~~(22)~~.

4. (Currently Amended) Photo-sensitive element as in ~~any claim hereinbefore~~, ~~characterized in that~~ claim 2, wherein the number of N-type transistors is variable from 1 to 12, in order to increase by a corresponding value the logarithmic conversion gain of said current photo-generated by said photo-sensitive reception means ~~(11)~~.

5. (Currently Amended) Photo-sensitive element as in ~~any claim hereinbefore~~, ~~characterized in that~~ claim 1, wherein said amplification and reading circuit comprises at least a third transistor ~~(23)~~ suitable to make a first amplification of the signal and a fourth transistor ~~(24)~~ to connect the photo-sensitive element ~~(10)~~ to a signal transmission line ~~(28)~~.

6. (Currently Amended) Photo-sensitive element as in claim 1 ~~5~~, ~~characterized in that~~ wherein said photo-sensitive reception means ~~(11)~~ consists of an inversely polarized N-type diode,

wherein said current conversion circuit comprises at least said first transistor and at least a second transistor, wherein said amplification and reading circuit comprises at least a third transistor suitable to make a first amplification of the signal and a fourth transistor to connect the photo-sensitive element (10) to a signal transmission line,

the second ~~(22)~~, the third ~~(23)~~ and the fourth ~~(24)~~ transistor are of the N-channel type and the first transistor ~~(21)~~ is of the P-channel type.

7. (Currently Amended) Photo-sensitive element as in ~~any claim from 1 to 5 inclusive, characterized in that~~ claim 15, wherein said photo-sensitive reception means (11) consists of ~~an~~ said inversely polarized P-type diode,

wherein said current conversion circuit comprises at least said first transistor and a second transistor, wherein said amplification and reading circuit comprises at least a third transistor suitable to make a first amplification of the signal and a fourth transistor to connect the photo-sensitive element to a signal transmission line,

the second (22), the third (23) and the fourth (24) transistors are of the P-channel type and the first transistor (21) is of the N-channel type.

8. (Currently Amended) Photo-sensitive element as in claim 5, ~~characterized in that~~ wherein said fourth transistor (24) is able to be selectively enabled to allow the signal relating to the photo-sensitive element (10) selected to be read at any moment whatsoever.

9. (Currently Amended) Photo-sensitive element as in ~~any claim hereinbefore, characterized in that~~ claim 1, wherein the photo sensitive element ~~it~~ is able to detect the light of a wavelength of between 400 and 1000 nm and an intensity varying in an interval of at least ~~6~~ 8 decades, between 10^{-5} and 10^3 W/m².

10. (Currently Amended) Photo-sensitive element as in ~~any claim hereinbefore,~~
~~characterized in that~~ claim 1, wherein said photo-sensitive reception means ~~(11) is made of~~
comprises an N-type diode, ~~consisting of~~ comprising the joint between an insulated N-type
diffusion and a P-type silicon substrate, able to define an interface area emptied of free loads and
characterized by the presence of an internal electric field.

11. (Currently Amended) Photo-sensitive element as in ~~any claim from 1 to 9~~
~~inclusive, characterized in that~~ claim 15, wherein said photo-sensitive reception means ~~(11) is~~
~~made of~~ comprises a P-type diode, ~~consisting of~~ comprising the joint between an insulated P-
type diffusion all contained in an N-type diffusion, able to define an interface area emptied of
free loads and characterized by the presence of an internal electric field.

12. (Currently Amended) Photo-sensitive element as in ~~any claim hereinbefore,~~
~~characterized in that~~ claim 1, wherein the photo sensitive element ~~it~~ is able to be entirely
integrated into a silicon substrate of limited size, to achieve a microchip.

13. (Currently Amended) Photo-sensitive element as in ~~any claim hereinbefore,~~
~~characterized in that~~ claim 1, wherein the photo sensitive element ~~it~~ is able to constitute a cell of
a linear or matrix multiple cell sensor.

14. (New) Photo-sensitive element as in claim 5, wherein said photo-sensitive
reception means comprises an inversely polarized N-type diode, the second, the third and the
fourth transistor are of the N-channel type and the first transistor is of the P-channel type.

15. (New) Photo-sensitive element for electro-optical sensors, comprising at least:
a photo-sensitive reception means,
a current conversion circuit to convert the current generated by said photo-sensitive reception means into a tension signal, and
an amplification and reading circuit,
wherein said current conversion circuit comprises at least an N-channel first transistor to be piloted with a tension which is variable between a high feed tension and a low feed tension, said photo-sensitive element being able to be taken to a reset state if the pilot tension of said transistor is low, and to an integration state if said pilot tension is high,
wherein said current conversion circuit further comprises at least a second transistor, wherein said amplification and reading circuit comprises at least a third transistor suitable to make a first amplification of the signal and a fourth transistor to connect the photo-sensitive element to a signal transmission line,
wherein said photo-sensitive reception means comprises an inversely polarized P-type diode, the second, the third and the fourth transistors are of the P-channel type.